

## POSITION DETECTION OF AN ACTUATOR USING IMPEDANCE

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ABSTRACT

Control system for devices such as an audio reproduction system, an actuator device, an electromechanical device and a telephony device. The system includes control circuitry which receives an input signal and a signal indicative of a position of a portion of the controlled apparatus. The control circuit provides an output signal to the controlled apparatus to affect an operation of the controlled apparatus. The output signal provides control of the apparatus to compensate for one or more of: motor factor; spring factor; back electromotive force; and impedance of a coil in a driver of the controlled apparatus. The signal indicative of position is derived by one or more position indicator techniques such as an infrared LED and PIN diode combination, position dependent capacitance of one portion of the controlled apparatus with respect to another portion of the controlled apparatus, and impedance of a coil in the controlled apparatus. The control circuitry is configurable to control transconductance and/or transduction of the system being controlled. A technique is disclosed to detect and measure a cant of a voice coil transducer, the technique including measuring a capacitance between one portion of the voice coil transducer with respect to another portion of the voice coil transducer over a range of movement of the voice coil during operation.